

CACTUS AND SUCCULENT JOURNAL

Of the Cactus And Succulent Society
Of America

Vol. XIII AUGUST, 1941 No. 8
CONVENTON ISSUE



FIG. 67. WHO'S WHO

Ladislau Cutak, in charge of succulents at The Missouri Botanical Garden. Mace Taylor photo.



CACTUS AND SUCCULENT JOURNAL

SCOTT HASELTON, *Editor*, Box 101, Pasadena, Calif. *Editorial Staff: THE ENTIRE SOCIETY.* Entered as Second Class Matter at Pasadena, Calif., under act of March 3, 1879.

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PRESIDENT'S MESSAGE

The first national conference of the Society is now history and its effect on the Society will be lasting and beneficial. The suggestion that we call it a conference rather than a convention comes from Mrs. Sutton and the appropriateness of the term is self-evident.

We conferred on all of the subjects necessary to an increased helpfulness on the part of the national officers and of the JOURNAL and many of the suggestions made in the conference will be put in force at once, while others will be adapted as opportunity presents.

Our membership obtained a closer view into the workings of the Society and we hope a more sympathetic realization of the difficulties we have had to overcome. We look for closer co-operation between the members and the officers, based on the personal contacts made there.

I have had more mail contacts with our members throughout the country than any other officer, with the possible exception of our Editor, and I looked forward to a personal meeting with my correspondents with a mixture of hope and fear. The fear was uncalled for as I found each of them more human and interesting than I had hoped and I am more than ever convinced that a lover of succulent plants is "ipso facto" a man to trust and admire.

On the entire trip of 5000 miles from Los Angeles to the convention and back, I met hundreds of members that did not attend the conference and visited numerous public and private collections. Not one of the members disappointed me but the collections east of New Mexico, both public and private, did. I felt that we had not put over the ideas we intended in our several articles in the JOURNAL and I resolved to write a series of articles on culture to stress the idea that succulent plants need water and food in quantity during the growing season to produce proper, healthful growth.

Two gardens were outstanding in the healthy condition of the plants displayed and in the annual growth. The first was the garden of James Gerdemann at Warrenton, Missouri, which was built exactly according to specifications given by me in various letters in the past three years. The beds were raised above the surrounding ground by a circle of rocks and the center of the space contained a mixture of sharp sand, leaf mold, and fertilizer while for strictly desert plants lime was added to one part of the bed. The plants so grown were healthy, of good color and produced flowers freely. Tender plants were potted in clay pots and cans in good, rich, but very loose soil, the pots brought outdoors in summer and taken into a fairly dark room in winter for protection and there kept dry. These plants also showed perfect color, normal healthy

growth and produced flowers freely.

The second collection of note was in the conservatory in Will Rogers Park at Oklahoma City. Here the plants were in beds of a loose soil and the Cerei and Euphorbias looked healthy, bloomed freely and had grown in a few years to the top of the glasshouse, possibly 18 feet above the beds.

With these two exceptions, all of the collections visited lacked something, they were either planted in hard or poor soil, denied sufficient water, or in some cases planted in what appeared to be a good grade of concrete and watered once a year in most years. Now if Gerdemann in his outdoor beds in Missouri and the Park Horticulturist in a greenhouse at Oklahoma City, each working under handicap of adverse climate, can grow perfect plants, then the same system applied in any other section of the country should produce results equally satisfactory and I appeal to each of these gentlemen to send to us an article covering his cultural secrets for publication here for the guidance of others.

The success of a conference, and of most other things, depends on the groundwork laid in painstaking detail long before the members assemble. At St. Louis we were fortunate in having an organization like the Missouri Botanical Garden to lay our groundwork and all praise is due to Dr. Merrill, the Director and Mr. Ladislaus Cutak for the careful planning of our conference. Our sincere thanks to Drs. Greenman and Woodson of the Herbarium of the Garden for the interesting talks on technical subjects made non-technical and human by their command of English and knowledge of human nature.

When the planned program threatened to bog down by the failure of scheduled speakers to attend or to give us advance notice that they could not attend, the day was saved by Dr. Elzada U. Clover of the Botany Department of the University of Michigan, who substituted for the absentees with most interesting talks and pictures.

Yes, the conference was a success and numerous letters from delegates are being received to confirm it. From a letter received from Mrs. Seels of Oklahoma City, Regional Vice President and Secretary to the conference, I quote "We met so many lovely people, all friendly and interested. When a group like that get together they are bound to enjoy themselves."

To me, every moment of my trip and of the conference will remain always a treasured memory and even after the close of the conference more pleasure was in store as I witnessed the marriage of my friend and travelling companion, Ervin Strong, to Miss Dorothy Renfro at Independence, Mo., the culmination of a long romance. The slight inconvenience of making the return trip alone was forgotten in my joy for them.

W. TAYLOR MARSHALL.



FIG. 68

Ray Naylor of Des Moines sends this picture of Mrs. Frank Seinsheimer, Charles R. Cole, W. Taylor Marshall, Scott E. Haselton, Ladislaus Cutak, Mrs. M. H. Starkweather. In front are Ervin Strong and Mace Taylor.
Note Mrs. Bakkers' badges.

First National Convention

A WORD OF APPRECIATION

When Mr. Marshall, our four-times president of the *Cactus and Succulent Society*, broached the subject of a national convention, I lost no time to bring this event to St. Louis. Dr. George T. Moore, director of the Missouri Botanical Garden, welcomed the idea and with his co-operation the wheels were set in motion to make it an outstanding success.

Mr. Marshall, at first, desired a quiet affair to be held within the mellowed walls of our institution. However, I realized this first gathering of cactus enthusiasts deserved some renown in the horticultural world and so every means was taken to insure for it due publicity. Mr. Morris Landau of the St. Louis Convention and Publicity Bureau was contacted and plans worked out for the entertainment of the guests. After much deliberation the Chase Hotel was chosen for the official headquarters as it was the most ideal and easily accessible to all our proposed meeting places. Every move made for the betterment of the convention was recorded with President Marshall and sanctioned by him. Thus a smooth contact was established and this, of course, accounts for the wonderful way everything clicked during the convention.

Mr. Robert Cadle of the Chase Hotel was most solicitous and rendered much aid prior to the convention. The salon exhibit of pictures in the lobby of the Chase Hotel was most meritorious and received a great deal of comment from all who viewed it. Credit also

must be given to Miss Jeanne Sutherland of the hotel staff for her part in the work at the Chase Hotel.

Congratulations are extended to the California Cactus Growers Association, which sponsored the exhibit of desert plants in the floral display house at the Missouri Botanical Garden. Some very unusual grafted crests and seedlings from the nurseries of R. W. Kelly were the envy of all who cast their eyes upon them. Colorful cactus bowls and dish gardens from Howard Gates attracted much attention and were very popular with the visitors. Gilbert Tegelberg's plants were incorporated into a neat desert garden and really contained some choice specimens, among them a grafted *Euphorbia lanata* crest, the outstanding plant in my estimation. Knickerbocker Nursery dispatched a group of succulents which were displayed on a table at the entrance to the exhibit. Other exhibitors enhanced the display by sending choice plants of various cacti and succulents and to all these my thanks are given for their hearty co-operation. Their names are found in the official program for the convention.

Credit, likewise, is due Mr. George Pring and the St. Louis Horticultural Society who were our hosts at the joint meeting, to the Sieloff brothers and their aides for providing such a good time on their premises, to the St. Louis daily papers for publicising our convention activities and to the radio stations KSD and WIL for interviews.

Most of you folks probably have no idea the great

amount of work that had to be done for the successful completion of our first convention. But let me assure you that it was a pleasure indeed and I would gladly do it all over again and even redouble my efforts. I am proud that I was called upon to assume this great task and will always recall it as the happiest moment of my life. Truthfully, I would like to send each one of you a personal letter of appreciation, but my time is so well taken up with gardening duties it would almost be impossible to do this at the present time. It was you who made the convention such a great success and I was but a mere cog in the mechanism operating it. Without your wonderful turnout, without your excellent behavior, without your co-operation the convention could not have been the success that it was. So thanks to you all and thanks not only once but thanks a thousand times.

I'll be seeing you at the next convention, I hope, and so till then—ADIOS.

LADISLAUS CUTAK.

"FROM OKLAHOMA"

Yes, the Candid Reporter did go to the Convention, too. And what a Convention! Cactus Nuts galore!

Saw Mrs. Harry T. Johnson from Oklahoma City in the floral house trying to name some Oklahoma Cactus for a group and was she on the spot! Mrs. James H. Hyde had packed a box of native *Echinocereus* for us to take along to show what grows in Oklahoma. Well, to make it interesting, she chose many variations of our "various species" and we—Well, Mrs. Johnson hardly recognized our own pets. We sure needed Mrs. Hyde. Maybe there is something to the story after all that they are all one species with several variations. Anyhow, it has caused some ideas to sprout and if given time we will have an answer.

It is too bad that more of our "Cactologists" were not along; Gee! We had fun and found so many nice people to talk cactus with. Can't you just imagine what a time we had? Mrs. Jesse Vanderburgh, The Chubbs, Winnie E. Jones, Jay Gilkey and others are sure to regret not going and the more they talk to us the more they will regret it.

We like Dr. Elzada Clover; we had looked forward to knowing her personally and she's O.K.; she may be a Michigan botany teacher, but from the depth of her sincere friendliness you'd guess she was from the West. We did not expect her to be high-hat understand—not after reading of her adventurous travels. We surely enjoyed her story and the pictures of her Colorado River trip. She promised to come to Oklahoma for a field trip, too.

And while on field trips—Gosh! Did we promise that many? There's Charles R. Cole and Mrs. Cole from Cincinnati, Mr. Marshall and Mr. Strong from California; E. P. Gueguen from Kansas City, Mr. Cutak from St. Louis and others—won't be so bad though if they just hold that Convention here and all come at once. We'd have one grand field trip. Really think they should since we were so generous with field trip promises.

'Twas nice to meet the Editor, Mr. Haselton; he has stood for our foolishness a long time now and since we have met him, we know why—He's just a good scout.

The Oklahoma Society feels quite honored that one of the group should serve as Secretary at this first Convention; and she is happy over it, too.

Mr. P. C. Reedy from way down south, McComb, Mississippi, had more enthusiasm than is usually credited to our amiable southern people. We hope some day to take him up on his offer of southland cookery—

and see what it's all about.

Mr. Ervin Strong, La Habra, California, seemed to be one of the busiest persons at the Convention and quite efficient, too. One of those very polite, rather quiet men who get things done.

Another busy person—Ladislaus Cutak; he had so many places to be all at once, but seemed to make them all. We enjoyed his Flower Gardens a lot even if he wouldn't let us pick the Orchids. You see Mrs. Johnson told him how they had chained a drunk to a Sahuaro in Arizona for trying to crash a party. He informed me that he had no chain and left the impression that he would not use a Sahuaro for a hitching post, but his dire words were, "If you expect to be present at further Convention Sessions,"—that was enough. We wore gardenias instead, but still wonder what he had in mind. We feel indebted to him for the many pleasant events he had planned for us. Papa Cutak was quite proud of him—but aren't we all?

Mr. Place from California proved quite a friend; anyhow when I absent-mindedly stated that some events occurring in Oklahoma before Statehood were not quite clear to me, he smoothed it over by remarking, "Well, we would not expect one of that tender age to recall facts clearly." Wasn't that diplomatic?

We were glad to know the Conservation Lady from Arizona, Mrs. M. H. Starkweather. She has our O.K.

Mr. and Mrs. John E. C. Rodgers from Lorain, Ohio, let us hear from that section and the K.I.O. Club was there, too.

Mr. and Mrs. Arthur Garrabant from New Jersey brought greetings from H. O. Bullard. I'll bet he was "fit to be tied" because he could not make it to the Convention. We were disappointed, too, H. O. Had looked forward to seeing you there. Know you would have had as much fun as we did.

Our genial President, W. Taylor Marshall, is not one to exaggerate; his Chamber of Commerce policies are right. Always work for your organization, but all fish stories are not about fish. Anyhow, we of Oklahoma did enjoy Mr. Marshall's visit here and hope he will come again so we can show him some of our big cactus—but they do not grow miles long in a year as they do in California, not even in a life-time. But, what's life without a little fun? We do appreciate the various works Mr. Marshall has contributed to the cause and his sense of humor, also.

Found some nice flowers in my collection the next morning after I arrived home: *Echinocereus enneacanthus*, *Strombocactus schmeidyckianus*, *Obregonia denegrii*, *Aztekium ritteri* and some apicas put on the show of welcome. All in the potted collection.

Know what I've been doing since I came home? I dug out all the old JOURNALS and have been really enjoying them. Thought I had done that all along, and I did, but now that I know so many of those illustrious characters they mean so much more to me. You read an article by someone you know and it means more always. You can grasp a fuller and deeper meaning and appreciation of their thoughts and ideas. I'll wager others have done this, also. It has been so much fun.

And another thing about this *Pronouncing Glossary*. It is one of the best things we've had so far. At the Convention we were not so afraid to call a plant name for fear of showing our ignorance as we would have been just a little while back. It is a real help and fills a great need and every member should have a copy.

Summing it all up, we are sure glad we had a Convention and that we could go and that there will be another. It is really something to look forward to.

"THE CANDID REPORTER."

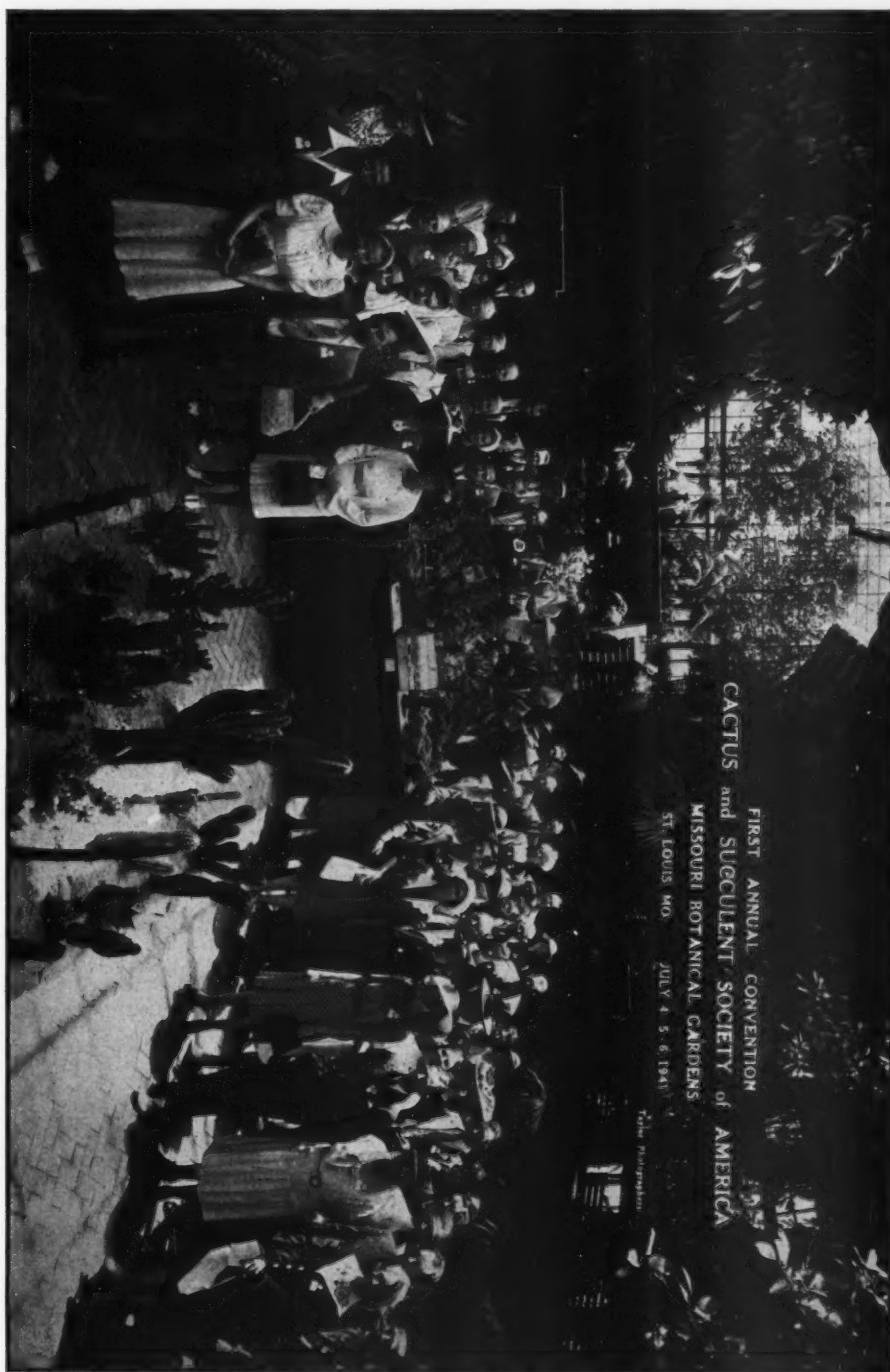


FIG. 69. Part of the delegates as they assembled at the Gardens. Note the exhibit of specimen plants from the California Cactus Growers Association.

REGISTRANTS AT THE FIRST NATIONAL CONVENTION

Name	Address	City
Atkins, Mrs. P. L.	1523 Nelson Street	Chicago, Illinois
Bell, W. S.	3014 East 2nd Street	Long Beach, California
Berry, Mrs. E. T.	1620 West 102 Street	Chicago, Illinois
Blocher, Arthur	317 West Division	Amboy, Illinois
Brandon, Hope	332 North Maramac	Clayton, Missouri
Brandon, Mrs. Hope	332 North Maramac	Clayton, Missouri
Briner, C. J.	17 Aberdeen	St. Louis, Missouri
Brushaber, Norbert	3217 North 39th Street	Milwaukee, Wisconsin
Bucholz, Casten	Rt. 5, Box 238	Waukesha, Wisconsin
Cariss, Florence	1707 Roosevelt Avenue	Los Angeles, California
Carnahan, Mrs. Russell	R. R. 4, Edgemont Station	East St. Louis, Illinois
Clark, Emil J.	2573 Sage	Cincinnati, Ohio
Clevenger, Louis	824 East Patterson Avenue	Kirksville, Missouri
Clevenger, Mrs. Clara	824 East Patterson Avenue	Kirksville, Missouri
Clover, Elzada	216 South Ingalls	Ann Arbor, Michigan
Cole, C. R.	1797 W. H. Taft Road	Cincinnati, Ohio
Cole, Mrs. C. R.	1797 W. H. Taft Road	Cincinnati, Ohio
Combs, L. F.	R. R. 13—Mt. Washington Station	Cincinnati, Ohio
Combs, Mrs. L. F.	R. R. 13—Mt. Washington Station	Cincinnati, Ohio
Cutak, Ladislus	2315 Tower Grove Avenue	St. Louis, Missouri
Debbeler, John W.	2529 North 21st Street	Milwaukee, Wisconsin
Espenlaub, E. R.	2028 South 10th Street	Kansas City, Kansas
Espenlaub, L. R.	2028 South 10th Street	Kansas City, Kansas
Espenlaub, Mrs. E. R.	2028 South 10th Street	Kansas City, Kansas
Fruhauf, Dolly	9543 Roslan	Overland, Missouri
Fruhauf, Walter H.	9543 Roslan	Overland, Missouri
Garrabrant, A. W.	39 Garrabrant Avenue	Bloomfield, New Jersey
Garrabrant, Mrs. A. W.	39 Garrabrant Avenue	Bloomfield, New Jersey
Gerdemann, James	Howell Avenue	Warrenton, Missouri
Gray, G. A.	3510 Wayne	Cincinnati, Ohio
Gueguen, E. P.	519 North Martin	Kansas City, Missouri
Hand, W. C.	519 North Martin	Muncie, Indiana
Hand, Mrs. W. C.	136 West Union	Muncie, Indiana
Haselton, Scott E.	3237 Olinville Avenue	Pasadena, California
Holste, Arthur H.	8954 Oglesby Avenue	New York, N. Y.
Hunter, Mrs. C. M.	3285 North 24th Place	Chicago, Illinois
Jaehnert, M. F.	1511 North Independence	Milwaukee, Wisconsin
Johnson, Mrs. Harry T.	2410 La Rosa Drive	Oklahoma City, Oklahoma
Kelly, R. W.	2410 La Rosa Drive	Temple City, California
Kelly, Mrs. R. W.	Main Street	Temple City, California
Lightner, Wm. P.	Main Street	Patoka, Indiana
Lightner, Mrs. Wm. P.	327 North Avenue 61	Patoka, Indiana
Lutes, Don	5628 North 4th Street	Decatur, Indiana
Lutes, Mrs. Don	5628 North 4th Street	Los Angeles, California
Marshall, Wm. Taylor	5628 North 4th Street	Philadelphia, Pennsylvania
Martin, A. M.	1623 West Scott	Philadelphia, Pennsylvania
Martin, Mrs. A. M.	1616 N. W. 33rd Street	Milwaukee, Wisconsin
Merck, M. .	2511 Pleasant	Oklahoma City, Oklahoma
Miller, Lona Eaton	3401 Brotherton Road	Des Moines, Iowa
Naylor, Ray L.	3401 Brotherton Road	Des Moines, Iowa
Naylor, Mrs. Ray L.	3438 Russell	Cincinnati, Ohio
Neumann, Daniel	3438 Russell	Cincinnati, Ohio
Neumann, Helen	822 Windsor	St. Louis, Missouri
Niermann, Alphonse J.	645 West 40th Place	St. Louis, Missouri
Niermann, Mrs. Alphonse	645 West 40th Place	Chicago, Illinois
Osgood, Mrs. Harry N.	10226 South Bell	Los Angeles, California
Place, C. A.	822 Pearl River	Los Angeles, California
Place, Mabelle	424 East 1st Street	Chicago, Illinois
Radden, Mrs. C. F.	1229 8th Street	Chicago, Illinois
Reedy, W. P.	1229 8th Street	McComb, Mississippi
Renfro, Dorothy	559 Evanston Avenue	LaHabra, California
Rodgers, John E. C.	559 Evanston Avenue	Lorain, Ohio
Rodgers, Mrs. John	527 Greenwell	Kansas City, Missouri
Rose, Robert	527 Greenwell	Kansas City, Missouri
Rose, Mary Lee	527 Greenwell	Cincinnati, Ohio
Rutenschroer, J. C.	527 Greenwell	Cincinnati, Ohio
Rutenschroer, Mrs. J. C.	527 Greenwell	Cincinnati, Ohio
Rutenschroer, Leroy	527 Greenwell	Cincinnati, Ohio
Rutenschroer, Mrs. L.	202 North 73rd Street	Milwaukee, Wisconsin
Salzman, Eric		

Schnurr, J. F.	3146 Rosina Avenue	Latonia, Kentucky
Seela, Mrs. S. P.	916 N. W. 6th Street	Oklahoma City, Oklahoma
Seinsheimer, Mrs. Frank	920 Burton	Cincinnati, Ohio
Soderberg, John	6535 Monroe Avenue	Hammond, Indiana
Starkweather, Mrs. M. H.	2111 East Adams Street	Tucson, Arizona
Strong, Ervin	315 W. Erna	LaHabra, California
Sutherland, Jeanne	Chase Hotel	St. Louis, Missouri
Sutton, Mrs. A. L.	501 South Locust Street	Jefferson, Iowa
Taylor, Mace, Jr.	520 East Esther Street	Long Beach, California
Tobusch, Herman	614 South Wisconsin Avenue	Villa Park, Illinois
VanSickle, R. E.	7728 Calumet	Chicago, Illinois
VanSickle, Mrs. R. E.	7728 Calumet	Chicago, Illinois
Vestal, A. G.	309½ West Columbia	Champaign, Illinois
Vestal, Mrs. A. G.	309½ West Columbia	Champaign, Illinois
Way, Fred L.	310 West 7th Street	Marysville, Ohio
Way, Mrs. Fred L.	310 West 7th Street	Marysville, Ohio
White, Pat	527 North 62nd Street	Wauwatosa, Wisconsin
Wiegand, Philip H.	1276 North 63rd Court	Wauwatosa, Wisconsin
Young, Z.	9205 Tudor Avenue	Overland, Missouri
Zimmerman, Mrs. L. P.	644 South 4th Street	Waseca, Minnesota
Johnson, S. E.	108 Brothers Street	Louisville, Kentucky
Wilson, Harry T.	108 Brothers Street	Kaukauna, Wisconsin
Wilson, Mrs. H.	1117 Stryker	Kaukauna, Wisconsin
Haag, John	1117 Stryker	St. Paul, Minnesota
Haag, Mrs. John	4064 Humphrey Street	St. Paul, Minnesota
Woodson, Mrs. L.	436 Upton Avenue, South,	St. Louis, Missouri
Brunson, D. A.	1936 Allison Street	Minneapolis, Minnesota
Peters, R. E.	1936 Allison Street	Des Moines, Iowa
Peters, Mrs. R. E.	2922 College Avenue	Des Moines, Iowa
French A. W.	2922 College Avenue	Alton, Illinois
French, Mrs. A. W.	2922 College Avenue	Alton, Illinois

PHOTOGRAPHIC EXHIBIT AT THE CONVENTION

The photographic exhibit, which consisted of 120 photographs assembled by Thor Methven Bock, was hung in the lobby of the Chase Hotel during the Convention. All prints were enlarged to solon size and, although the purpose of the exhibit was to stimulate interest in succulent plants, the prints were of such a professional nature that it attracted the attention of the general public.

The photographs are being kept intact for a showing in the local libraries, after which they will be used in the JOURNAL or returned.

The list of exhibitors follows:

DIVISION A.—CACTI

CLASS 1. BOTANICAL PHOTOGRAPHS

1. Cactus flower in vertical section, R. H. PEEBLES 1st Pl.

2. *Lophocereus Schottii*, R. H. PEEBLES . 2nd Pl.

CLASS 2. INDIVIDUAL CACTUS PLANTS

3. *Opuntia basilaris*, GRAHAM HEID . . . 1st Pl.

4. *Trichocereus Schickendantzii*, WRIGHT PIERCE 2nd Pl.

5. *Parodia sanguiniflora*, ROY MILLER . . . 3rd Pl.

6. *Opuntia aurea*, R. H. PEEBLES . Hon. Mention

7. *Epostoa Dauwitzii*, HERMAN TOBUSCH

8. *Astrophytum myriostigma*, GEORGE LINDSAY

9. Barrel Cactus, GRAHAM HEID

10. *Opuntia basilaris*, GRAHAM HEID

11. Christmas Cactus, GRAHAM HEID

12. *Coryphantha elephantidens*, GEORGE LINDSAY

13. *Echinocactus polycephalus*, ROY MILLER

14. *Mammillaria plumosa*, WRIGHT PIERCE

15. *Mammillaria bocasana*, WRIGHT PIERCE

16. *Mammillaria Hahniana*, WRIGHT PIERCE

17. *Mammillaria bocasana*, WRIGHT PIERCE

18. *Mammillaria* species, WRIGHT PIERCE

19. *Mammillaria* species, WRIGHT PIERCE

20. Old Lady in the Shadow, MRS. RAY L. NAYLOR

21. *Echinocactus Grusonii*, MRS. E. V. SCHNEIDER

22. *Mammillaria Parkensonii*, MRS. E. V. SCHNEIDER

CLASS 3. CACTUS FLOWERS

23. *Cereus*, MRS. ELDEAN OLSEN . . . 1st Pl.

24. *Mammillaria Wilcoxi*, R. H. PEEBLES . 2nd Pl.

25. *Pilocereus aeniensis*, GEORGE LINDSAY . . . 3rd Pl.

26. *Selenicereus pteranthus*, ROY MILLER Hon. Mention

27. Cactus, DR. ALPHONSE HEUN . . . Hon. Mention

28. Queen, GEORGE LINDSAY . . . Hon. Mention

29. *Trichocereus fascicularis*, GEORGE LINDSAY

30. *Acanthocereus pentagonus*, GEORGE LINDSAY

31. *Eriocereus Bonplandii*, S. F. DARLING

32. *Echinopsis hybrida*, S. F. DARLING

33. *Cereus Hildmannianus*, ROY MILLER

34. *Carnegiea gigantea*, R. H. PEEBLES

35. *Machaerocereus gummosus*, GEORGE LINDSAY

CLASS 4. HABITAT PHOTOGRAPHS

36. *Peniocereus Greggii*, R. H. PEEBLES . . . 1st Pl.

37. *Myrtillocactus cochal*, WRIGHT PIERCE

2nd Pl.

38. *Bergerocactus Emoryi*, WRIGHT PIERCE

3rd Pl.

39. *Echinocereus coccineus*, GRAHAM HEID

Hon. Mention

40. *Opuntia chlorotica*, ROY MILLER

Hon. Mention

41. Organ Pipe Natl. Monument, GEORGE LINDSAY

42. Habitat of *Coryphantha desertii*, PAT WHITE

43. *Echinocereus mojavensis*, WRIGHT PIERCE

CLASS 5. GARDENS

44. Apartment Window Garden,

MRS. DUNFRED B. ENOS . . . 1st Pl.

45. Iowa Cactus Garden, MRS. RAY L. NAYLOR

2nd Pl.

46. My Back Yard Cactus Garden,

MISS JEANNE SUTHERLAND . . . Special Award

CLASS 6. MISCELLANEOUS

47. Horned Toad, SCOTT E. HASELTON . . . 1st Pl.

48. Cactus Pattern, GRAHAM HEID . . . 2nd Pl.

49. Sahuaro, GRAHAM HEID . . . 3rd Pl.

50. Stem Patterns, GEORGE LINDSAY, Hon. Mention

51. Pals, GEORGE LINDSAY
 52. Cholla, GRAHAM HEID
 53. Trapped, R. H. PEEBLES
 54. *Astrophytum* Seedlings, WRIGHT PIERCE
 55. *Mammillaria Hahniana* Seedlings,
 WRIGHT PIERCE
 56. *Echinocereus rigidissimus* Seedlings,
 WRIGHT PIERCE
 57. *Euphorbia Danvitzii* Seedlings, WRIGHT PIERCE
 58. An undescribed genus, R. H. PEEBLES

DIVISION B.—OTHER SUCCULENTS

CLASS 1. BOTANICAL PHOTOGRAPHS
 59. *Aloe variegata*, J. R. BROWN..... 1st Pl.
 also, Best Photograph Shown
 60. *Euphorbia mammillaris*, ROY MILLER. 2nd Pl.

CLASS 2. INDIVIDUAL PLANTS

61. *Euphorbia cereiformis*, GRAHAM HEID
 1st Pl.
 62. *Nananthus vittatus*, HERMAN TOBUSCH
 2nd Pl.
 63. *Taverista grandiflora*, HERMAN TOBUSCH
 3rd Pl.
 64. *Yucca Whipplei*, ROY MILLER. Hon. Mention
 65. *Sedum Morganianum*, E. O. ORPET
 66. *Titanopsis hugonia*, HERMAN TOBUSCH
 67. *Euphorbia grandicornis*, MRS. RAY L. NAYLOR

CLASS 3. FLOWERS

68. *Yucca mojavensis*, ROY MILLER..... 1st Pl.
 69. *Huernia zebra*, HERMAN TOBUSCH. 2nd Pl.
 70. *Yucca Thornberi*, R. H. PEEBLES..... 3rd Pl.

CLASS 4. HABITAT

71. *Cleistostylus arborescens*, E. O. ORPET. 1st Pl.
 72. *Nolana Parryi*, ROY MILLER..... 2nd Pl.
 73. Nevada Mood, ROY MILLER..... 3rd Pl.
 74. Senor Ocotilla, MRS. ELEDEAN OLSEN
 Hon. Mention

75. *Agave species*, PAT WHITE

CLASS 5. GARDENS

76. Kitchen Window Garden,
 MRS. DUNFRED B. ENOS..... 1st Pl.
 77. A Corner of the Garden,
 MRS. MARTHA H. BOCK

CLASS 6. MISCELLANEOUS

78. *Agave*, MRS. ELEDEAN OLSEN..... 1st Pl.
 79. *Mesembryanthemum*, E. O. ORPET..... 2nd Pl.

DIVISION C.—DESERT SCENES

80. Desert Mesa, ROY MILLER..... 1st Pl.
 81. Organ Pipe Natl. Monument, WRIGHT PIERCE
 2nd Pl.
 82. Lower California Desert, GEORGE LINDSAY
 3rd Pl.

DIVISION D.—SPECIAL DIVISION

83. Snapshots, LLOYD COMBS..... Hon. Mention

NONCOMPETITIVE

Entered by The Southwest Cactus Growers
 84. Dwarf Joshua Tree, GEO. OLIN
 85. *Notocactus Haselbergii*,
 W. H. ABERCROMBIE, JR.
 86. *Echinocereus Engelmannii*,
 W. H. ABERCROMBIE, JR.
 87. Souvenirs, ROY MILLER
 88. *Opuntia basilaris*, GEO. OLIN
 89. *Sequoia* Dudleya, E. S. TAYLOR
 90. Garden Visitor, E. S. TAYLOR
 91. *Haworthia viscosa*, drawing, FRANCES RUNYON
 92. *Hamatocactus setispinus*, drawing,
 FRANCES RUNYON
 Entered by ROY MILLER
 93. Pistil and stamens



FIG. 69a
 J. R. Brown's photograph of *Aloe variegata* was judged
 the best in the exhibit.

Entered by WALDIE H. ABERCROMBIE

94. *Lobivia Steinmannii*
 95. *Stapelia cantabricensis*
 96. *Notocactus tabularis*
 97. *Peniocereus Johnstonii*
 98. *Notocactus Linkii*
 99. *Parodia Maassii*

100. *Gymnocalycium Quehlianum*

101. *Malocarpus Sellowii*

Entered by THOR METHVEN BOCK

102. *Consolea falcata*

103. *Leptocereus Grantianus*

Entered by GEORGE OLIN

104. *Pilocereus polylophus*

105. *Yucca mojavensis*

106. *Yucca baccata*

107. *Petroglyphs*

108. *Lemaireocereus Thurberi*

109. *Lobivia aurea*

110. Into the Sunlight

111. Desert Holly

112. *Opuntia Parisbii*

113. *Nolina Bigelovii*

114. Oooh Snakes!

115. *Yucca baccata*

116. *Utahia Sileri*

117. Big Pines Road

SPECIAL EXHIBIT

118, 119, 120. Three original plates for the new
 book "Naming Cacti" by THOR METHVEN BOCK.

DR. GEORGE ENGELMANN AND THE MISSOURI BOTANICAL GARDEN IN RELATION TO OUR KNOWLEDGE OF CACTI

By J. M. GREENMAN

We are living at a time of specialization, when specialists are organized into societies to discuss those subjects which are of mutual interest. It is not a new departure from the old Academy of Science inclusive program. Some of you may be interested to know that just about forty-one years ago a group, somewhat similar to your society, namely "The St. Louis Cactus Association" met at Shaw's Garden to discuss various questions relative to cacti. A partial record of that meeting is still preserved in a very much weathered copy of the "Sunday Star Illustrated Magazine" of June 17th, 1900.

Enough of the record is preserved, however, to indicate the personnel of the group, the great variety of cactus forms under cultivation at that time, and there is an indication of the same enthusiasm which is manifest at the present meeting.

When I was asked to speak before this society on the subject of "Dr. George Engelmann and the Missouri Botanical Garden in Relation to our Knowledge of Cacti," I didn't stop to think that we might have at this time temperatures of 95 to 100 degrees. But I'm glad to be here, and I'm glad to speak on the subject as announced.

In order to understand the work and achievements of Dr. Engelmann, it has seemed to me desirable that we consider briefly his background, his home surroundings, his early education, his natural bent, his university training, the reasons for his migration to America, and perhaps also some of his personal characteristics and qualities of leadership.

No complete biography of Engelmann has been written, although several short biographical sketches have been published. From these I have drawn freely, but I shall endeavor to avoid too much detail.

Dr. George Engelmann was born February 2, 1809, at Frankfort on the Main in Germany and died in St. Louis on February 4, 1884, at the age of 75 years and two days. His paternal grandfather was Reverend Theodore Erasmus Engelmann, pastor of the Reformed Church at Bacharach, Germany.

Dr. George Engelmann's father was expected to enter the ministry—a calling which several generations of Engelmanns had followed. Accordingly he was sent to the University of Halle. The profession did not appeal to him; and in short he became a schoolmaster instead of a minister. He, George Engelmann's father, married a daughter of George Oswald May, a painter of some repute, and they together founded a private school for young women. This couple was blessed with thirteen children, and George Engelmann with whom we are concerned was the oldest. His early education was carefully directed by his parents, and he was in due course sent to the Gymnasium of his native city. Young Engelmann soon showed an inclination for the natural sciences, and it was during this time that his interest in botany became manifest.

The Engelmann family, keen on tradition and true to German caste, expected that this young man would enter the ministry; and thus he was sent to the University of Heidelberg to study theology. This plan was not to the young man's liking, and he therefore changed from theology to medicine. Although ostensibly studying medicine young Engelmann devoted considerable time to botany, geology, and chemistry. Dur-

ing Engelmann's stay at Heidelberg he was greatly impressed by three friends, namely Louis Agassiz, Karl Schimper and Alexander Braun, all of whom became later distinguished scientists.

While at the University of Heidelberg, Engelmann, being a liberal, became somewhat involved with government authorities, because of participation in certain student demonstrations. This made it necessary for him to leave the University of Heidelberg in 1828.

He then went to the University of Berlin and there continued his medical studies for two years, after which he matriculated at the University of Wurzburg where he was graduated as Doctor of Medicine on July 9, 1831.

Engelmann's dissertation was entitled "De Anthology Prodrodus" which was published in Frankfurt in 1832. The original manuscript is in the Library of the Missouri Botanical Garden. The title of the thesis may be interpreted to mean the morphology of plants or the morphology of flowers.

Just how much Engelmann may have been influenced by the previous work of Goethe on this subject can be only a matter of conjecture. Certainly it cannot be said that Engelmann was less original or less profound in the presentation of his subject than Goethe. The theory of metamorphosis of plants, although published by Goethe in 1792 and probably original with him, was first promulgated by Caspar Friedrich Wolff many years previous to Goethe's publication.

After graduating from the University of Wurzburg, Engelmann went to Paris to continue his study of medicine. Meanwhile some of his relatives, on account of dissatisfaction with political conditions in Germany, came to America and settled near Belleville, Illinois. Their reports apparently were so favorable that other relatives considered migrating to the new world; and Dr. George Engelmann was commissioned by an uncle to visit America as an advance agent to investigate actual conditions found in this country, and report back to his people in Germany. He accepted the commission and in September 1832 sailed from Bremen and landed in Baltimore in November of the same year. From Baltimore he went to Philadelphia, presumably there to make the acquaintance of Mr. Thomas Nuttall. From Philadelphia Engelmann proceeded westward, arriving in Belleville, Illinois, in February, 1833. At the home of a relative near Belleville, Dr. George Engelmann established himself and here practiced medicine for several months. His practice in that small community apparently was not very remunerative, and above all it was very monotonous to him. Accordingly he planned a botanizing expedition and travelled through southwestern Illinois, Missouri, Arkansas and northern Louisiana. In Arkansas he contracted a fever, and some six months later returned to Belleville, in the spring of 1833, somewhat impaired in health and without funds.

In the autumn of 1833 Doctor Engelmann settled in St. Louis, opened an office at Third and Chestnut Streets and began the practice of a resident physician. Progress was at first slow, but success followed, and soon he became interested in many activities, among which were the publication of a German periodical, "Das Westland," and a German newspaper, "Anzeiger des Westens."

In addition to the practice of medicine he resumed his botanical work; and from 1835 to 1839 he labored assiduously in building up a medical practice, in collecting chiefly in the vicinity of St. Louis, and studying the plants collected. Thus his practice, his scientific researches and his herbarium grew simultaneously. In the fall of 1839 he visited Germany leaving his prac-

tice with Dr. Adolph Wislizenus. After his return to America he began to push his botanical studies even more vigorously than in previous years.

From 1840 to 1846 Dr. Engelmann and Dr. Wislizenus practiced medicine jointly.

In 1842 Engelmann published a paper on *Cuscuta* or "dodder" which went a long way towards promoting his reputation as a taxonomist. It received universal recognition and approval in botanical circles. This study was extended, additions and corrections were made until in 1859 he published in the Transactions of the St. Louis Academy of Science a treatise of all known *Cuscutae*, recognizing and characterizing some seventy-seven species and numerous varieties. This publication is still a classic.

I mention Engelmann's work on *Cuscuta* particularly because it indicates the thoroughness with which he studied his plants. Furthermore, when he became interested in any particular group of plants in almost all cases he continued the study of that particular group through a period of years, or at least until he mastered the group concerned.

Other difficult groups of plants which received similar critical study by Engelmann are: Cactaceae, *Euphorbia*, *Isoetes*, *Juncus*, Loranthaceae, Pinaceae, *Sagittaria*, *Vitis* and many others. In all these groups Engelmann became the leading authority. Consequently, when the United States Government began its explorations of new territory with reference to the survey of natural resources, the establishment of political boundaries, the building of railways, etc., it was to Dr. Engelmann, as well as to Dr. John Torrey and Dr. Asa Gray, that the Government authorities turned for the identification of the plant materials obtained on these explorations. Not only is this true for the plants collected on government surveys, but also for the collections made by individuals—such for example as the collections of Dr. A. Wislizenus on his "Tour to Northern Mexico in 1846 and 1847," and also the extensive collections made in southwestern United States and Mexico by Dr. Josiah Gregg, by Charles Wright, by A. Fendler, by Ferdinand Lindheimer, and many others.

To Engelmann were referred for study and determination those groups of plants on which he had become the leading authority in America.

Thus we find the results of Dr. Engelmann's researches incorporated in the official government reports such for example as the:

"CACTACEAE OF EMORY'S RECONNAISSANCE"

Military Reconnaissance from Fort Leavenworth, in Missouri, to San Diego, in California (1848);

"CACTACEAE OF THE MEXICAN BOUNDARY"

Report of the United States and Mexican Boundary Survey (1859);

"CONIFERAE OF WHEELER'S EXPEDITION"

Report Geological Surveys, etc. (1878);

"CACTACEAE OF PLANTAE FENDERIANAE"

Memoirs American Academy (1849);

Some of Engelmann's publications were in cooperation with co-workers, for instance with Dr. Asa Gray, and with Dr. J. M. Bigelow.

We are indebted to Dr. George Engelmann more than to any other for our present knowledge of cacti. His work on this family of plants stands out preeminently above that of any other individual.

When he began his study of the Cactaceae, there were less than a dozen species of American cacti known to the scientific world. To this small number he added nearly 300 species and varieties new to science—a truly remarkable contribution to the knowledge of any one group of plants.

Just when Engelmann began his intensive study of cacti, it is impossible to say, but it probably was about 1840. His interest and studies of the group continued throughout his life time.

His bibliography on the Cactaceae alone includes more than a dozen titles. I shall not attempt to enumerate them. But I should like to add that not all of his notes, drawings, descriptions, etc., of cacti have been published. The same thing is equally true in other groups of plants.

In fact it may interest some of you to know that all of Engelmann's notes, drawings, descriptions, etc., have been carefully collated and bound in some sixty quarto volumes. These sixty volumes are preserved in the Missouri Botanical Garden Library.

Incidentally, all the published papers of Dr. Engelmann have been carefully arranged, reprinted, indexed and bound in a quarto volume for ready reference.

Whether Dr. Engelmann ever built up a large collection of living cacti is not known at the present time. It is probable, however, when his home was located at 5th and Elm Streets from 1847 to 1868, and later when he lived at Locust and Garrison, that at different times he had numerous cacti growing in his private garden. It is quite likely, moreover, that some of this cactus material should have been presented to Mr. Henry Shaw and found its way to Mr. Shaw's private garden or in the later years even to the Missouri Botanical Garden; but even so it is doubtful if any of it is still living. Cactus plants in cultivation are sometimes short-lived.

On the other hand the private herbarium of Dr. Engelmann, consisting of more than 90,000 specimens, was presented to the Missouri Botanical Garden after Dr. Engelmann's death. This herbarium contains all the dried pressed plants on which Dr. Engelmann worked, which means that the types or original specimens from which he drew up his descriptions are preserved for all time, barring of course any unusual catastrophe, such as fire, cyclone, tornado, bombing, etc. But it is not my present purpose to dwell on the herbarium of the Missouri Botanical Garden, except for those plants which served Engelmann in his many research problems.

Permit me to say just a word about Engelmann as a collector. He was as a matter of fact an inveterate collector. However, as a busy physician with an extensive practice in St. Louis and surrounding country, collecting, of course, had to be secondary; but it is evident from material in his herbarium that visits to patients often yielded many botanical specimens of profound interest. Vacations always produced copious plant material for his studies. His journey through southwestern Illinois, Missouri, Arkansas, and northern Louisiana in 1834-35 has been mentioned. However, many of the plants obtained on this journey were unfortunately lost in swimming or fording streams.

Some of the other botanical expeditions made by Engelmann were: a botanical expedition to Texas in the forties; later two journeys to the Rocky Mountains of Colorado and New Mexico; an extended trip to the Great Lakes region; a trip to Oklahoma; a journey through the Appalachian Mountains of Tennessee and North Carolina; a journey to Utah; and finally a journey to the Pacific Coast region, where, as in Colorado, he gave particular attention to a study of the Coniferae.

Finally, may I say that I have endeavored to present briefly something of Engelmann's background, educational qualifications, and outstanding characteristics, all of which have contributed to his remarkable success

as a professional man and a constructive botanist of the front rank among men of science. Moreover, I have tried to point out that the Missouri Botanical Garden, which came into existence through the influence of Dr. Engelmann and the vision and benevolence of Mr. Henry Shaw, is the natural repository of all of Dr. Engelmann's plant collections and here they will be preserved indefinitely for reference and study by present and future qualified students of botany.

MISSOURI BOTANICAL GARDEN

July 4, 1941.

CONSERVING THE NATIVE DESERT PLANTS

Address by Mrs. M. H. STARKWEATHER, TUCSON, ARIZ.

Conservationists in all parts of the world are perhaps most interested in conserving the native plants that thrive in those parts of the country in which they live. They are, however, also interested in assisting other plant lovers in conserving native plants no matter where they are found.

Residents of the great south-western desert of the United States are no exception to this rule. They are particularly proud of and interested in conserving the unique, courageous plants, the giant sahuaro, the sotols and wild flowers that still remain in those parts of the south-west and that formerly abounded in this most unusual growth.

Because of the unusual rainfall during the past winter, the Arizona desert has been on parade. We have not only seen acres of Arizona poppies in bloom, but whole sections of them. As far as the eye could see they waved in all their golden glory. I am sorry to report that on the desert too, the pastime of the great American public was carried on assiduously. Tubfulls of these golden poppies were torn up, only to be cast aside along the roadway on the way home. The Desert Garden Club of Tucson placed three temporary signs "Please Do Not Pick the Wild Flowers" on the "A" Mountain area near Tucson and spread quarts of seed of summer blooming annuals along the route to the top of this scenic drive. The same garden club was also instrumental in having the Arizona Highway Department place signs at El Picacho State Park grounds, noted for its fine stand of sahuaro and wild flowers, admonishing the public not to pick the Arizona poppies, owl's clover and many other wild flowers that decorated the park in such profusion this spring.

Outstanding among the Cactaceae is the giant sahuaro. Of this cactus Mr. R. Manning, in his guide of Arizona, says:

"This plant is number one among all desert plants. It is first in size, first in longevity and first by vote of the legislature who designated the blossoms the State Flower of Arizona.

"The shape of the sahuaro is like a giant baloney standing on end, with enormous weenies growing out of it for arms. Usually the arms grow up, but often they are twisted around like a man trying to reach an itchy spot on his back."

Sahuaros get as tall as forty feet. The branchless ones are mere saplings. This cactus grows on an average of about two inches a year. They store sufficient water in a rainy season to last as long as four years without a refill. What an idea for a fountain pen!

At the present time we are waging a war against the insect world that is destroying our giant sahuaro and organ pipe cacti. The first report of a bacterial disease now ravaging these very interesting plants was made by Dr. J. G. Brown of the plant pathology department

of the University of Arizona, located in Tucson. During the Christmas holidays Dr. Brown lectured on this subject before the American Association for the Advancement of Science in Philadelphia.

Affected plants have been observed in an area 200 miles broad north and south, and 250 miles long east and west, but it is believed they extend much beyond these limits. Most of the deaths of the giant sahuaro have occurred during the past two years. The condition is quite serious, as few seedlings are coming up to replace the dead and dying plants. The first symptom Dr. Brown said, is a small, circular, light colored spot, which, as the infection progresses, enlarges and assumes a purplish hue. The affected plant can be killed within two or three weeks and in six months only the woody skeleton of the sahuaro remains.

At least one insect carrier has been discovered in the study of the diseased sahuaros. It is a fly that lays its eggs on the surface of the cactus. The eggs hatch and produce small white larvae. The larvae are attracted to exposed flesh of the plant and they enter an injured spot and feed upon the tissue. Soon afterwards the decayed spot begins to bleed. Dr. Brown has found that if the infected area on a cactus is cut out and the spot painted with creosote, the plant suffers no further damage. This is a very tedious job, of course, and it is more important to discover and stop the method of transmission.

The Tucson Chamber of Commerce has become interested in this problem and solicited the aid of the Desert Garden Club of Tucson, asking their co-operation in securing an appropriation through our U. S. Senators. At the request of Senator Carl Hayden the appropriations committee added \$10,000.00 to the agricultural department supply bill to enable the bureau of plant industry to establish control measures in both the National Sahuaro Monument, 20 miles east of Tucson, and the Organ Pipe Monument, about ten miles south and south-west of Ajo. The committee realizes that if these cacti are to be saved, immediate steps must be taken. Mr. Brown stated that while the appropriation had not yet been received, the Forest Service has had a man working on these affected sahuaros. He also stated that a large land owner near Tucson who has a magnificent stand of giant sahuaros, is working on the plants on his property and getting excellent results by cutting out the decayed spots and coating them with creosote.

When nature inauguates an extinction program on any particular plant, we sometimes wonder if they have outlived their purpose for which nature has created them, but when man deliberately destroys beautiful, slow-growing plants for commercial reasons, one's sense of fairness and justice is aroused, because they have destroyed beauty on the desert that they cannot replace. This is the case of the "spoon flower" plant. Hundreds of *Dasylirion wheeleri*, commonly called "sotol" by the natives, have been destroyed on the great south-western desert to obtain the freakish "spoon flowers." The belief entertained by many that these spoons are the bloom of the plant, is erroneous. These spoons are the very heart or core, which is chopped out of the center of the plant with an ax and the spoons are stripped off of this core, much as you would take the leaves off of an artichoke.

Tearing out the hearts of these plants is like tearing out the hearts of those for whom this arid stretch of land with its interesting flora, holds untold beauty and fascination.

Practically all of the south-western states have laws to protect their beautiful native plant life. Among the fantastic plants that are protected by the Arizona

plant law are the cactus, lily, iris, amaryllis, orpine and many others. Nevertheless, the traffic of digging up and removing thousands of the *Dasyllirion Wheeleri* from privately owned and leased ranches, continues year after year. It is legal perhaps, but in a corrupt sort of way.

If it were not for this unnecessary and wanton destruction of our native plants, our government would not find it necessary to spend millions of dollars to prevent soil erosion in these localities.

The beauty of the lily or yucca blooms, the family to which the *Dasyllirion Wheeleri* belongs, is known to all of you. No less an authority than Dean J. J. Thornbur, botanist of the University of Arizona, states that after a half a century or so of growth, the sotol sends up its first bloom stalk.* But not all of them are permitted to ripen and produce fertile seeds, because cattle grazing on the desert will scamper up rocky slopes and almost inaccessible places where many of the plants grow, to nip off the succulent bloom stocks before they have an opportunity to produce flowers, to say nothing of reaching the ripe seed stage. These bloom stalks are comparable to asparagus tips that humans relish so highly.

The decorative value of the spoons is very doubtful; they are not artistic but are top heavy, over-sized ivory cupped spoons, which are placed upside down in a container, usually combined with lilliput cat-tails, and, called an arrangement by some florists.

These ridiculous spoons were sold from house to house by peddlers for as little as 25c a dozen in the West, and became very hackneyed and unpopular. Strange to say, in some New York florists' shops they have brought fabulous prices. I am told they sold for the ridiculous sum of one dollar apiece. They are not flowers, they are not beautiful, but they are something different and that is why the gullible public purchases them.

The mutilation and destruction of hundreds of these beautiful plants, the *Dasyllirion Wheeleri*, has continued for four years. We have been trying to curb the "spoon flower" fad since 1939. In March of this year, letters were sent to all chairmen of the principal flower shows held in New York, Boston, Chicago, and the other leading cities in this country, asking them to refuse to permit "spoon flowers" to be exhibited. Kodak pictures of the *Dasyllirion Wheeleri* before and after destruction were enclosed in all these letters.

This encouraging reply was received from the Society of American Florists through their Executive Secretary, Robert H. Roland:

"The Committee has instructed me to write to you to say that it appreciates your problem, is in sympathy with your efforts, and, at the first opportunity promises to take action as you suggest to prevent spoon flowers from being exhibited at any future national flower shows."

We have had thousands of stickers printed for all out-going mail. They read: "Please Do Not Buy Spoon Flowers and Discourage Others From Using Them."

Our campaign against this destructive fad is endorsed by

Desert Garden Club of Tucson

Cactus and Succulent Society of America

Arizona Cactus and Native Flora Society, Phoenix, Arizona

Arizona Federation of Garden Clubs

At the convention of The National Council of State Garden Clubs held in Asheville, N. C., in May, I was privileged to tell that body of interested gardeners about the "spoon flower" fad and asked their co-operation in eradicating it.

*EDITOR'S NOTE: As we go to press, Mr. Hertrich reports from the Huntington Botanical Gardens that he has just flowered *D. Wheeleri* from seed in 11 years.

Since 1939 we have had articles against the use of these spoons in the leading publications and florist's magazines in the United States. Among them were: *The New York Times*, *Florist's Review*, *Texas Chronicle*, *Cactus and Succulent Journal*, *The American Home Magazine*, *F. T. D. News*, *Horticulture Magazine*, *Tucson Citizen*, *Arizona Daily Star*, *Phoenix Gazette* and many others.

As the result of these articles, requests for seeds of the *Dasyllirion Wheeleri* have been received and sent to every state in the union, islands off the coast of Florida, Venezuela, South America, and even far away Hong Kong, China. More than 1000 packages of seeds which we have gathered on the desert have already been sent to any one requesting them for two stamps and an addressed stamped envelope and all have been encouraged to curb the purchase of spoon flowers.

I doubt whether many of the seeds that have been sent out from Tucson will germinate in the colder climates and develop into beautiful rosette type of plants that we see in certain areas of the south-western desert—but be that as it may, by offering to send the seeds, it gives us an opportunity to tell them about our conservation efforts and to ask their help by refusing to buy or to accept the spoons as gifts. But the fact remains that their appreciation of the plant will increase a hundredfold after they experience the difficulty of propagating it.

Another encouraging reply was received from the editor of *The American Home Magazine* of New York. They have a subscription list of over 2,000,000. He stated that as far as the desert spoons were concerned, he was inclined to think that their popularity for decorative work in his part of the country was much less and was steadily waning. He said while he had not made any careful survey, he had noticed the spoons only in the smaller, cheaper retail shops, and one large distributor of all kinds of florist's supplies told him that he had already been approached by conservation interests and told about checking the wide sales of the spoons. He said he thought our efforts were showing valuable results.

It was also most encouraging to read in the May News Letter of Arizona Federation that Donofrios Florist Shop in Phoenix, had agreed to discontinue handling the spoon flowers. They are the leading florists in that city.

A large department store in the east stated that they would dispose of the stock they had on hand and then refuse to sell any more spoons.

We should be very happy if a new industry could be created—the Spoon Flower Industry, but do not believe that the commercialists should destroy all of these slow growing plants before new plants of the *Dasyllirion Wheeleri* can be grown large enough to supply spoons. All of the nurseries around Tucson have been supplied with seeds free of charge and it is hoped that under such favorable conditions they may grow more rapidly than they do on the desert in their native habitat. I have several greenhouse grown *Dasyllirion Wheeleri* that are now four years old, and the little spoons are now not over one quarter of an inch in diameter, which convinces me that their growth is slow, very slow.

Whenever the *Dasyllirion Wheeleri* is mutilated to obtain the spoons, it leaves an ugly scar on the desert—a lot of decaying debris is scattered about and thus lessens the beauty of the desert for the thousands of visitors who come annually to enjoy the territory surrounding Tucson, Arizona.

Each one of you can help in this conservation movement by protesting to every spoon flower vendor you

contact. Every refusal to purchase or accept them as gifts, will, eventually result in the discontinuance of their being offered for sale; it will lend valuable assistance in the important work of conservation in the south-west, and, when the fad is completely eliminated, will save hundreds of beautiful native desert plants which are now being destroyed.

The poet Erika Brecht said:

*'What times are these
Where talking about trees is nigh a crime
For it implies not talking about crime . . .
In ancient books we read of what is wise:
To stay away from fights and live our short lives
without fear
And manage without force:
ALL THAT I CANNOT DO: for
I live in times too sinister, too dark . . .'*

And so I shall keep on fighting to preserve our natural wonders and beautiful native plants for the generations that are to come.

GREETINGS TO CONVENTION

Please present my greetings and best wishes to members of Cactus and Succulent Society of America. I wish for this important meeting much success and great benefit to our worthy cause. Regretting I am unable to be with you.

Sincerely,

MINERVA HAMILTON HOYT,
President International Deserts Conservation League.

OFF TO THE CONVENTION

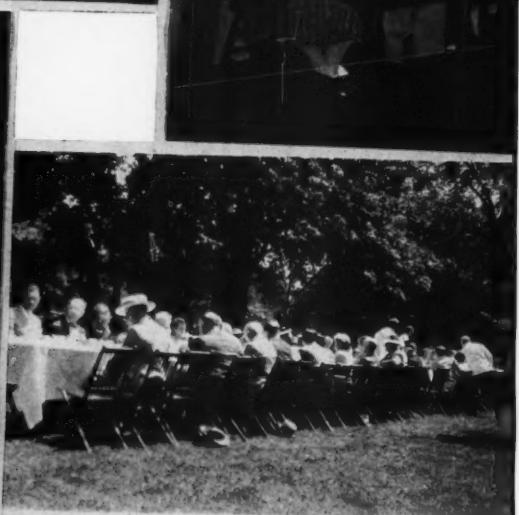
By MACE TAYLOR

At last the decided hour of 3:30 Sunday afternoon arrived and held its breath long enough for my traveling companion, Mr. W. S. Bell, and me to jump aboard and start our journey to St. Louis and the Cactus Convention. Eastward we rushed across the afternoon lighted deserts at a pace none too fast for our anticipating spirits. Like a relay runner the gas gauge would race across the marked off plate and then at a refill would jump back to start off again an another lap of feeding the miles to the milometer. At last, at approximately 1:00 A. M., the following morning, we arrived in Williams, Arizona, where we drove into the first auto court of our trip. After ringing the noisy night bell at the tiny office, we were greeted about three minutes later by a sleepy, tanned, Indian who showed us to the cracker box units that he had to rent. We decided to take this first one rather than risk not getting another place to stay, considering the very late hour. When I say cracker box, I believe the descriptive name does not flatter this room for it was so small we felt cramped much as the contents of a nickel box of soda crackers and the bed rustled as if it had fostered many more crumbs of humanity before we took possession. I hesitate to tell of the lavishness of the shower but for one who likes to splash about this one was a strait-jacket, where to be within it, one had to hold aloft his arms; and to manipulate the loose control fixtures which were uncomfortably familiar with the lower ribs or the small of the back, one had to contort his arms twistingly about him much as a snake climbs a tree. In the instance where you wished to be dampened inconsistently on both sides you had first to expose yourself unashamedly on one side and then step out of the shower and turn, at the same time lifting your left foot over the various other necessary plumbing fixtures to the position where you were able to slide

back in with the unscathed side in the line of the now dwindling spurts. As the one side had the luxury of a wall only head high, one had to be careful of the angle of spattering that he did not direct a steady stream over the top into the adjoining closet where the clothes would become water logged in no uncertain fashion.

We awoke early at the first call of morning and the creaking of the next door neighbors' beds and arose to brave insanity once again as we took one more strait-jacket shower apiece (wetting both sides as well as the closet, other fixtures and the garden outside of the window). We then started for the Grand Canyon, but were detoured at the thought of breakfast in town. Our early morning snack consisted of milk, which much to our relief, was not watered (water being very scarce around these parts), pork sausage (which, evidently, hadn't been introduced to either milk or water), and hot cakes (three, Park Avenue size) . . . they had never heard of waffles! Then after parting with enough silver to make a gold brick pale, we, as I say, started for the Grand Canyon. We were excited to say the least; all that we had heard about this marvelous natural wonder we were going to see at last for ourselves. As the road department evidently didn't wish us to be too startled at seeing such a wonderous gap, they served us little gaps and holes in the road all the way up to a more subtle gap when the National Park Ranger asked us for our \$1 entrance fee, which, by the way, made quite a gap some place else. After parting with this bit of Abraham Lincoln commemorative we descended upon the ranger at the information building in the park and departed from him with our pockets stuffed with guide papers, such as: where you may purchase a juicy (almost!) steak dinner at the price of the cow on the hoof, and where to find the rest rooms, and how to find your way back from them (Ask any ranger!). At last, after driving no little time attempting to find a place that was not marked with a "No Parking" sign, we left the car to rest from the bumpy road and rushed over to the edge of the canyon and peered over. Gullies, gorges, canyons, mountains in holes, the Colorado river like a string in the depths and over all a bluish green haze that was stuffed and packed into the gaping pockets; it was too much for us after that breakfast in Williams and we just had to sit down and recuperate. Then we rushed over and peered in again and that same dizzy feeling came over us and we had to go back and sit down once more (maybe it wasn't that breakfast!).

Hoping to find a curio around the price of a penny postal card, we browsed around one of the shops watching the unpacking of souvenirs direct from Japan. The real Indian articles evidently came over with the Mayflower, from the startling Park avenue prices. After leaving the Indians to their wares and cares and wading through a snow fall of film wrappers on the canyon walk, we returned to the none too rested car and proceeded around eastward atop the South Rim, stopping at most of the scenic view points as marked along the way until, at last, we came to the tower house. There we sat in the large room of Indian style pow-wow type and gazed out of the windows and over the hazy expanse of the canyon while our dry throats kept us thinking sympathetically of the rows of cold five cent soda pop that a large lady was selling for a dime. Above this room is built a huge rock tower, where for twenty-five cents you may climb up to the top room and view the scenery from a higher point while we commoner folk clung to our quarters (if we had any). As we did not go up, we do not know what the charge



was to come down.

We left the 'hopi house' (hope we get your money house) and started southeast, stopping only once to view a huge gorge that has dug its way off from the Grand Canyon in an exclusive manner. Here in this forsaken place was a brightly garbed aged Indian who eyed all of us camera carriers and grunted conspicuously when we passed him, as if he would like to have his picture taken if we could spare a little George Washington wampum. That was our last stop to absorb scenery until we stopped at dusk to view the Painted Desert. Later that night, we arrived in the much lighted city of Albuquerque, New Mexico, where we found an auto camp fit for a king with a neon insignia in the shape of an *Opuntia* over our door instead of the usual number plate. A double bed apiece that didn't complain all night and a beautiful shower large enough to run around in rather made up for the inconveniences of the camp in Williams.

The next day we were on our way again for St. Louis with a short detour via the Lake of the Ozarks; quite a contrast to the deserts we had been travelling over, but disappointingly absent of barefooted hillbillies. A mild Thursday night was supplied for our entrance into St. Louis where we wanderingly found the convention hotel and checked into our reservations for a good night's sleep. The next morning we appeared at the registration desk in clean but wrinkled suits (the pressers were on a vacation!) and received our attractive green and white identification buttons furnished by Mrs. Bakkers. Introductions galore to people from New York to California and Illinois to Mississippi, made the morning flee pleasantly. Many names familiar in the JOURNAL became living people and talk was interrupted instantaneously only by new friendly handshakes. At noon we were still meeting new faces and exchanging ideas. Next we travelled out to the Missouri Botanical Gardens where under the grand old trees we ate a most satisfying lunch served by a group of white-coated Lincoln freemen. Good friends and a wonderful meal made conversation flow steadily while various devotees of the camera hopped about taking pictures for the folks back home to see, which, of course, included myself.

After resting a short while after eating, we met in one of the halls at the garden where we heard two interesting talks by members of the Botanical Garden staff, after which a conducted tour of the garden was made with more camera shutters clicking. Through the many greenhouses, across broad lawns and around glistening pools we wound on a train of inspection, until, at last, darkness and the closing of the glass houses forced us to find our way back to the hotel for a breathing and cleaning-up interval.

The evening found us meeting with the St. Louis Horticultural Society with talks by Dr. Elzada Clover with colored slides, Mrs. Starkweather, and President W. Taylor Marshall with colored slides. The meeting was presided over by Ladislaus Cutak, who was caught one moment in the midst of a hearty laugh by the flash camera and forced myself and the camera to retire in our embarrassment to a less conspicuous place. Back at the hotel we went again for another night's rest in preparation for another big day.

Saturday noon found us aboard one of the three busses that took us out to Sieloffs' Gardens for lunch and a tour of their greenhouses. Much film was exposed and many bottles of pop were disposed of. After the lunch a meeting was called where much discussion and interrogation occurred with some introductions interspersed. After a flattering introductory speech by our president which was meant for me, it was found that I was missing, being outdoors in a shady spot drinking more pop and serving on the newly formed Conservation Committee. The meeting over with, members and plants boarded the busses and returned to the Hotel. While waiting for elevator service, the hotel lobby was an eruptive cactus garden that caused no small amount of remarks from innocent bystanders.

The closing dinner in the Chase Club was a gala occasion with courses of food filling gaps in the conversations while a row of officers and Society guests sat at one long table on an elevated platform overlooking the entire room. More flash camera shots became negatives and with the pleasure of eating over, a large screen was installed where color slides from Harry Johnson were shown, followed by a Mexican Collecting Trip talk by Ladislaus Cutak accompanied by slides, in turn followed by exciting motion pictures of Dr. Clover's trip down the hazardous Colorado River with her verbal account of their adventures. As I seemed to be the most camera conscious available person I was chosen to run the strange and complicated movie projector for Dr. Clover's pictures, which much to my amazement, gave me little trouble fortunately as once the pictures were started I couldn't take my eyes from the screen as the trip was relived before me.

The convention closed. It didn't seem possible that it was all over, it was such a round of enjoyable affairs with so many new and interesting people with whom to exchange ideas. Now all were packing their grips and leaving for their respective directions to all the points of the compass. Would they meet again someday in our land of gardens in California? We hope that they will, for cactus gardens here are really gardens and not pot affairs of small plants, but huge full grown plants that grow as if they really liked it in this cactus kingdom at the edge of the continent.

P. S. I went home, too.



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CAPTIONS FOR PICTURE ON OPPOSITE PAGE

FIG. 70. UPPER LEFT: The speakers' table at the banquet. UPPER RIGHT: President Marshall and Convention Sec'y., Mrs. Seela. CENTER LEFT: Mrs. M. H. Starkweather and Miss Elzada Clover. CENTER RIGHT: The Missouri Botanical Garden as host. LOWER LEFT: President Marshall retires on his laurels to resume his studies and research. BOTTOM RIGHT: Note the characteristic pose of the two cactus enthusiasts bending over to examine the healthy plants in the Sieloff Nursery.

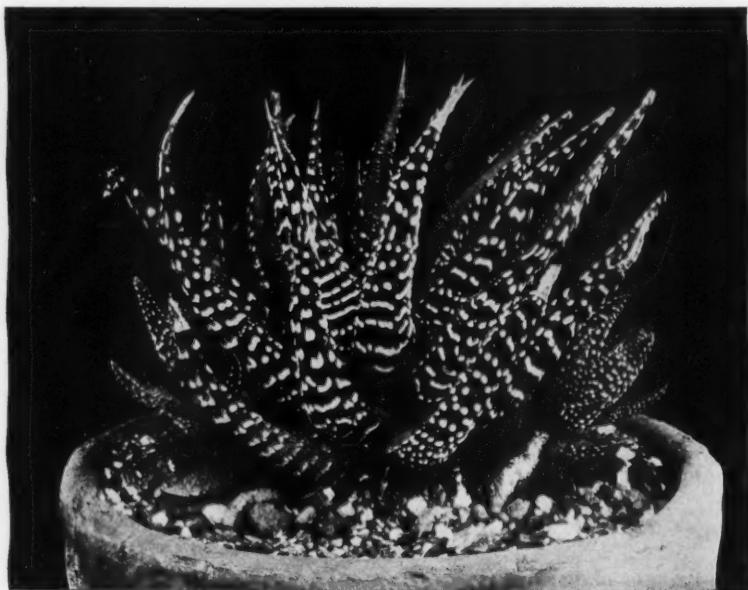


FIG. 71. A form of *Haworthia attenuata* Haw.



FIG. 72. *Haworthia radula*, Haw. reduced.

The above photos by J. R. Brown show very clearly why so many Society members are specializing in Haworthia collections.



FIG. 73. *Echeveria bella*. A fine spring-flowering pot-plant, x 0.35

Some New Echeverias From Southern Mexico

By E. J. ALEXANDER

Among the fine collections of succulents in The New York Botanical Garden's conservatories, there has, during the past five years, been an awakening to life in the American succulent group through the collections made by Mr. Thomas MacDougall of New York City in the states of Oaxaca and Chiapas in southern Mexico. One of the groups most benefited has been the genus *Echeveria*, wherein a number of the older species which had been lost have been replaced with wild collected plants. Most of these are fairly common in the nursery trade and therefore not exciting as novelties, but there are a number of interesting ones which give great horticultural promise. Some of these have not as yet flowered, but of those that have, five have proved to be undescribed species, and more are "under suspicion." The five species here described are so very different from anything hitherto known, and each so attractive in its own

way, that the writer believes a popular future lies in store for them when they are placed in the trade. It is with great pleasure therefore that the following species are here described and illustrated.

Echeveria bella Alexander, sp. nov.

SERIES RACEMOSAE

Planta glabra, acaulis et caespitosa; foliis confertosulatis, 1.2-1.8 cm. longis, oblanceolatis, 2-4 mm. latis, laete virentibus, acutis; scapis multilateraliter racemosis, 10-20 cm. altis, rubris superne; florum pedicellis 1 vel rarer 2-floribus, 6-10 mm. longis, bracteolis 2-5 mm. longis; sepalis 3-5 mm. longis, linearibus, patentibus; corollis 1 cm. longis, auranteolatis coccineo-roseatis tinctis, angulis obtusis; fasciculo carpellorum ovoideo, stylibus 2 mm. longis, non-patentibus.

Plant caespitose and freely offsetting, the rosettes dense, 2-4 cm. in diameter; leaves 1.2-1.8 cm. long, narrowly oblanceolate, acute, 2-4 mm. wide, bright yellow-green, not at all glau-

cous; inflorescence 10-20 cm. tall, erect, its bracts very different from the leaves, 18 mm. long and 5 mm. broad, becoming reduced upwards, acutish; the upper ones somewhat glaucous as also is the reddish rachis; flowers 4-12 in a multilateral raceme, the pedicels reddish, 6-10 mm. long, occasionally 2-flowered, the two bracts linear, 2-5 mm. long; calyx yellow-green, somewhat glaucous, the tube 1 mm. long, the lobes spreading, linear, obtuse, nearly equal, 3-5 mm. long; corolla 8-10 mm. long, orange-yellow flushed with rosy-scarlet especially on the upper side, campanulate, sharp-angled in bud, blunt-angled in flower, the lobes spreading apart

nearly to the middle, the tips recurved; stamens opposite the petals 5 mm. long, those opposite the sepals 6 mm. long; carpel-cluster broadly ovoid, 7-8 mm. long, the carpel bodies pale greenish-yellow, stigma and styles bright green, the styles 2 mm. long; nectarine gland white, 1.5 mm. broad.

This neat little plant possesses the smallest rosettes and narrowest leaves of any known species; its free-flowering habit and its rapid growth make it worthy of inclusion in any collection.

Related to *E. gracilis*, from which it is easily distinguished by its smaller and thinner leaves and smaller rosettes.

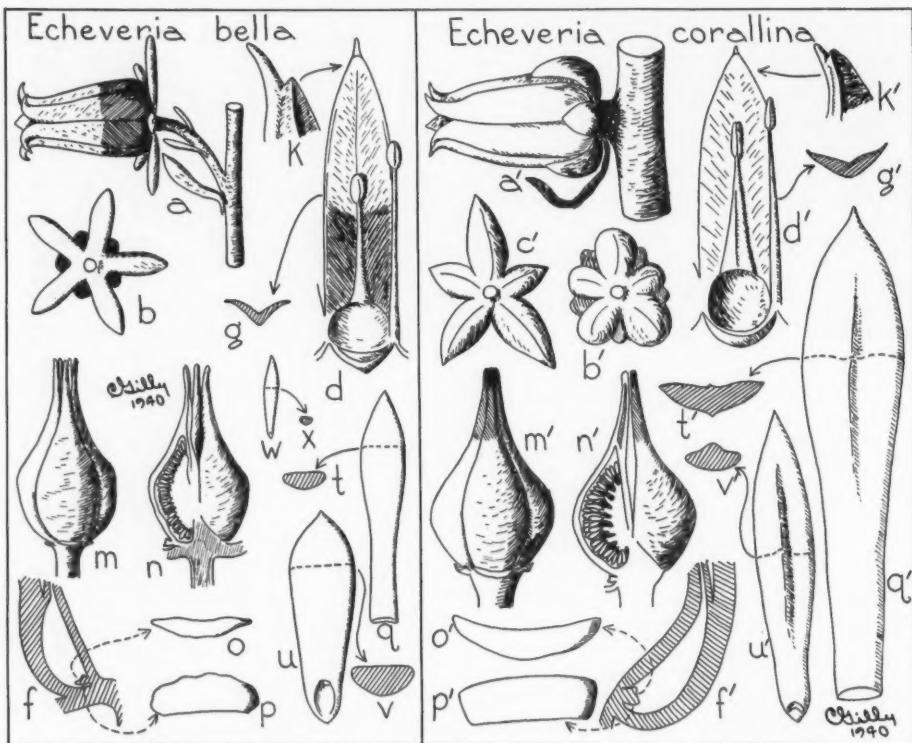


FIG. 74

Echeveria bella. Explanation of Plate: (a) flower, x 2; (b) basal view of flower, showing calyx, x 2; (d) petal, interior view, x 4; (f) median longitudinal-section through petal base, showing nectary gland, nectary sac and stamen attachment, x 8; (g) median cross-section through petal, x 4; (k) tip of petal, interior face to the right, x 8; (m) carpel cluster, x 4; (n) longitudinal section through carpel cluster, x 4; (o) nectary gland, face view, x 10; (p) nectary gland, dorsal view, x 10; (q) leaf, x 2; (t) cross-section through widest portion of leaf, x 2; (u) mid-peduncle bract, x 2; (v) cross-section through mid-peduncle bract, x 2; (w) pedicillary bract, x 2; (x) cross-section through pedicillary bract, x 2.

Echeveria corallina. Explanation of Plate: (a) flower, x 2; (b) basal view of flower, showing calyx in natural position, x 2; (c) calyx, flattened out to show shape and size of lobes, x 2; (d) petal, interior view, x 4; (f) median longitudinal-section through petal base, showing nectary gland, nectary sac and stamen attachment, x 8; (g) median cross-section through petal, x 4; (k) tip of petal, interior face to the right, x 8; (m) carpel cluster, x 4; (n) longitudinal section through carpel cluster, x 4; (o) nectary gland, face view, x 10; (p) nectary gland, dorsal view, x 10; (q) leaf, natural size; (t) cross-section through widest portion of leaf, natural size; (u) mid-peduncle bract, natural size; (v) cross-section through mid-peduncle bract, natural size.

FIG. 75. *Echeveria carminea* x 0.2

Type collected near San Cristobal Las Casas, State of Chiapas, Mexico, in the winter of 1938-39 and flowered at The New York Botanical Garden in 1940. Specimen deposited in The New York Botanical Garden Herbarium.

***Echeveria corallina* Alexander, sp. nov.**

SERIES SPICATAE

Planta glabra, breviter caulescens; foliis laxiter rosulatis, oblanceolatis, abrupte acutis, 5-8 cm. longis, 14-16 mm. latis, pallido-viridis brunneo-roseis tinctis, glauccissimis, scapis multilateraliter racemosis, roseatis superne; floribus sessilibus vel pedicellis 1 mm. longis; sepalis ovatis ad ovato-lanceolatis, adpressis, acutis, inaequallimis, caeruleo-viridis; corollis oblongo-conicibus, 14 mm. longis, corallino-rubris; fasciculo carpellorum globoso-ovoideo, stylibus 3 mm. longis, viridis, stigmatibus rubro-purpureis.

Plant short-caulescent, the stem 2-3 cm. long, eventually branching below; leaves in a loose terminal rosette, oblanceolate, abruptly acute, 6-8 cm. long, 15-16 mm. broad, pale green with brownish purple margins and red apiculus, the whole leaf frequently shaded with brownish pink, very glaucous, the glauccescence producing a soft pinkish tone to the foliage; inflorescence 4-5 dm. tall, erect, with bracts similar to the leaves but more green and reduced upwards, the flowering portion roseate-salmon with a glaucous overcast; flowers 20-25, multilaterally arranged, sessile or on 1 mm. pedicels which are oblique bulges off the rachis; calyx slate blue-green, the tube $1\frac{1}{2}$ mm. long, the lobes appressed to the corolla, ovate to ovate-lanceolate, acute, very un-

equal, the two longest 7 mm. long, the intermediate 6 mm. long, the two shortest 4 mm. long; corolla oblong-conical, 14 mm. long, the petals 3 mm. wide with recurved-spreading tips; stamens opposite the petals 6 mm. long, the filament much flattened, subulate-triangular; stamens opposite the sepals 8 mm. long, the filament terete or nearly so, scarcely enlarged at the base; anthers 1.5 mm. long; honey-sac nearly circular, 2.5 mm. in diameter, 1.25 mm. deep; carpel-cluster 8 mm. long, 5 mm. in diameter, the carpel-bodies 5 mm. long, united 1.75 mm. above the base, white; styles 3 mm. long, apple green, the stigmas truncate, maroon purple, the color running .75-1 mm. down from the apex;

FIG. 76. *Echeveria corallina* x 0.35

nectarine gland flattened-lunate, 2.25 mm. wide.

A rather unattractive plant, but beautiful in flower because of the unusual pastel coloring of the inflorescence.

Related to *E. mucronata*, differing principally in its strongly glaucous character and closely appressed calyx-lobes.

Type collected south of Zapaluta (Trinitaria), State of Chiapas, Mexico, in the winter of 1938-39 and flowered at The New York Botanical Garden in 1940. Specimen deposited in The New York Botanical Garden Herbarium.

Echeveria alata Alexander, sp. nov.

SERIES RACEMOSAE

Planta glabra, caulescens, basi ramosis; caulis foliosis, foliis non-rosulatis, 5-7 cm. longis, oblanceolatis, 2 cm. latis, atro-viridibus, rubro-marginatis, apicibus abrupte apiculatis; scapis rubris multilateraliter racemosis, 15-20 cm. longis; florum pedicellis 15-18 mm. longis, bracteolis 12 mm. longis; sepalis adscendentibus, lanceolatis, acutis, 13-18 mm. longis; corollis laete rubris, 2-2.2 cm. longis, urceolatis, angulis alatis; fasciculo carpellorum orbiculo-ovoideo, stylibus longe acuminate, olivaceis, superne atro-rubris, stigmatibus olivaceis.

Plant caulescent and shrubby, branched from the base, the branches erect; leaves not at all

rosulate, scattered along the stem and long persistent, dark green with red margins and red apex to keel on the underside, 5-6 cm. long, 2 cm. wide, thick and fleshy, oblanceolate and abruptly acute; inflorescences 15-20 cm. long, erect, the rachis dark red, the bracts similar to the leaves but only 3.5 cm. long and 12-14 mm. wide; flowers in a multilateral raceme, the pedicels 15-18 mm. long, 2-bracted, the bracts lanceolate, 12 mm. long; calyx-lobes nearly equal, 13-18 mm. long, lanceolate, ascending, acute; corolla 2-2.2 cm. long, urceolate, with sharp, winged angles, bright scarlet outside, (the three inner petals sulphur-yellow at the apex with a scarlet keel), cream-yellow inside, only the petal-tips recurved; stamens opposite the petals 12 mm. long, their filaments unribbed, those opposite the sepals 13 mm. long, their filaments broader and with a strong central rib; carpel-cluster 17 mm. long, yellowish-white flushed with rose, carpels united 2 mm. above the base; styles long-acuminate, greenish-white below, the upper 4.5 mm. maroon; stigmas capitate, pale olive-green.

An attractive plant, quite different in effect from the usual types of *Echeveria* because of the

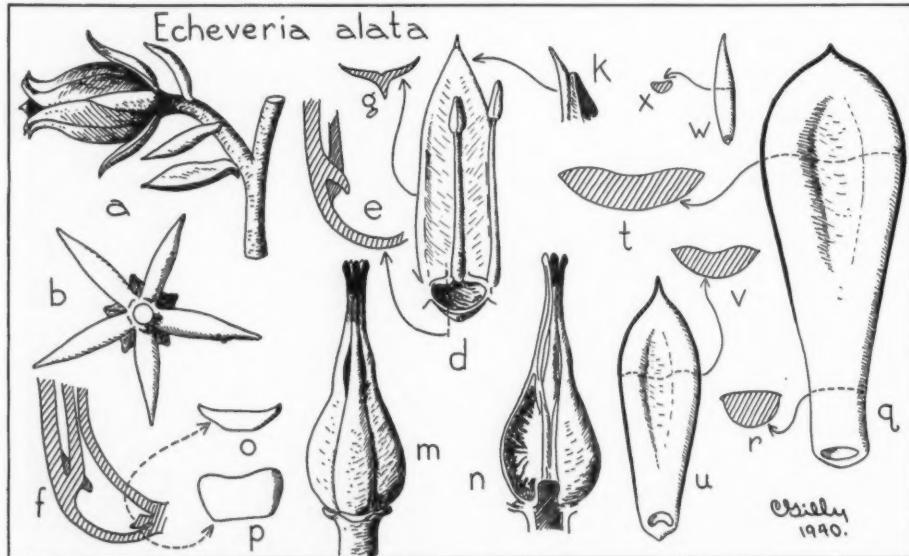


FIG. 77

Echeveria alata. Explanation of Plate: (a) flower, natural size; (b) basal view of flower, showing calyx, natural size; (d) petal, interior view, $\times 2$; (e) longitudinal section through base of petal (as indicated by dotted line on figure d) to show form and attachment of basal fold, $\times 4$; (f) median longitudinal section through petal base, showing nectary gland, nectary sac, and stamen attachment, $\times 4$; (g) median cross-section through petal, $\times 2$; (h) apex of petal, interior face to the right, $\times 4$; (i) carpel cluster, $\times 2$; (j) longitudinal section through carpel cluster, $\times 2$; (k) nectary gland, face view, $\times 5$; (l) nectary gland, dorsal view, $\times 5$; (m) leaf, natural size; (n) cross-section through leaf-petiole, natural size; (o) cross-section through leaf-petiole, natural size; (p) cross-section through mid-peduncle bract, natural size; (q) leaf, natural size; (r) cross-section through mid-peduncle bract, natural size; (s) cross-section through mid-peduncle bract, natural size; (t) cross-section through widest portion of leaf, natural size; (u) mid-peduncle bract, natural size; (v) cross-section through mid-peduncle bract, natural size; (w) pedicillary bract, natural size; (x) cross-section through pedicillary bract, natural size.

FIG. 78. *Echeveria alata* x 0.17

leafy stems and the red and dark green coloring.

Unrelated to any other *Echeveria*, but with affinities pointing to the Central and South American species.

Type collected in the mountains west of Tehuantepec, State of Oaxaca, Mexico, in the winter of 1938-39, and flowered at The New York Botanical Garden in 1940. Specimen deposited in The New York Botanical Garden Herbarium.

Echeveria spectabilis Alexander, sp. nov.

SERIES RACEMOSAE

Planta minute muriculopapillosa, caulescens, pauciramosa, caulinibus 3-6 dm. altis; foliis apice sub-rosulata dispositis et proximi inferiore disseminati, rotundobovatis, luteo-viridibus, marginibus rubris, 4-7 cm. longis, et 2-3 cm. latis, petiolis distinctis; scapis 2.5-7 cm. altis, multilateraliiter racemosis; florum pedicellis 3.5 cm. longis, bracteolis 15-16 mm. longis; sepalis 16-18 mm. longis, patentibus, oblongo-linearibus; acutis; corollis 2.4 cm. longis, 1.5 cm. latis, oblongo-conoideis, auranteo-coccineis, apicibus luteis, acute angulatis; fasciculo carpellorum ovoideo, stylibus viridis, stigmatibus rubro-purpureis.

Plant caulescent and shrubby with several few-branched stems up to 6 dm. tall so far as known; all parts densely muriculate-papillose, which produces a satiny sheen and gives an impression of puberulence; leaves subrosulate at the apex and scattered immediately below, 4-7 cm. long and 2-3 cm. wide, dull yellow green with red margins, abruptly mucronate, petiole and blade distinct; inflorescences 2.5-7 dm. long, erect, the bracts similar to the leaves, but not so distinctly petioled, 3-4 cm. long, obovate, abruptly apicu-

late; flowers 5-12 in a multilateral raceme, the pedicels 3.5 cm. long, 2-bracted, the bractlets oblong-linear, acute, 15-16 mm. long; calyxlobes nearly equal, spreading, 16-18 mm. long, oblong-lanceolate, acute; corolla 2.4 cm. long, 1.5 cm. wide, oblong-conical, sharply angled, vermillion, the apical 5-7 mm. lemon-yellow, the tips spreading, petals deeply channelled the entire length of the inner face; nectar sacs 5 mm. deep; stamens opposite the petals 15 mm. long, those opposite the sepals 17 mm. long, stouter; carpel cluster 21 mm. long, the carpels united for 3-4 mm. above the base, the body 6 mm. long, creamy yellow, styles 13 mm. long, pale yellow green becoming green towards the apex; stigmas maroon-purple with olivaceous tips; nectarine glands lunate, pale yellow, touching each other and standing out collar-like.

The large, brilliant flowers and robust growth of this plant make it one of the most showy members of the genus when in flower.

Habit and pubescence similar to *E. coccinea* and *E. pubescens* differing in the much larger, pedicelled flowers, less pubescent, and differently shaped leaves. Related rather to the Central and South American group, differing greatly, however, in flower size. This species and *E. carminea* are approached in flower size only by *E. Harmsii* (*Oliveranthus elegans*).

Type collected in the Sierra Juarez near Macuiltianguis, State of Oaxaca, Mexico, in the winter of 1937-38 and flowered at The New

FIG. 79. An exceedingly showy plant of *Echeveria spectabilis*.

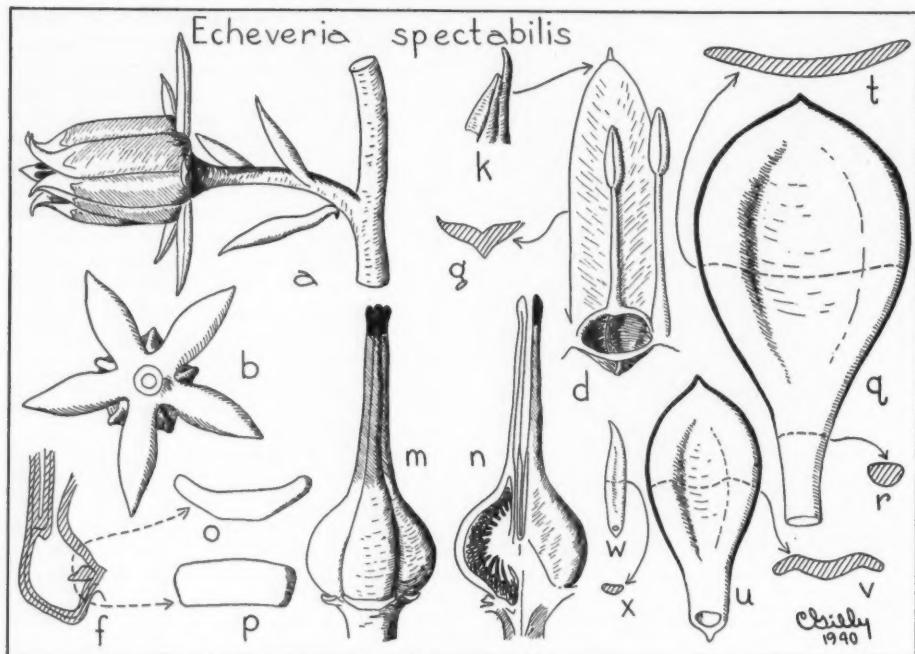


FIG. 80

Echeveria spectabilis. Explanation of Plate: (a) flower, natural size; (b) basal view of flower, showing calyx, natural size; (c) petal, interior view, $\times 2$; (d) median longitudinal section through petal base, showing nectary gland, nectary sac and stamen attachment, $\times 4$; (e) median cross-section through petal, $\times 2$; (f) tip of petal, interior face to the left, $\times 4$; (g) median cross-section through petal, $\times 2$; (h) carpel cluster, $\times 2$; (i) longitudinal section through carpel cluster, $\times 2$; (j) nectary gland, face view, $\times 5$; (k) nectary gland, dorsal view, $\times 5$; (l) leaf, natural size; (m) cross-section through leaf-petiole, natural size; (n) cross-section through widest portion of leaf, natural size; (o) mid-peduncle bract, natural size; (p) cross-section through mid-peduncle bract, natural size; (q) cross-section through mid-peduncle bract, natural size; (r) mid-peduncle bract, natural size; (s) cross-section through mid-peduncle bract, natural size; (t) cross-section through widest portion of leaf, natural size; (u) mid-peduncle bract, natural size; (v) cross-section through mid-peduncle bract, natural size; (w) pedicillary bract, natural size; (x) cross-section through pedicillary bract, natural size.

York Botanical Garden in 1940. Specimen deposited in The New York Botanical Garden Herbarium.

Echeveria carminea Alexander, sp. nov.

SERIES RACEMOSAE

Planta papilloso-puberula, caulescens, caulinis 4-7 dm. altis; foliis apice sub-rosulatis dispositis et proximi inferiore disseminatis, oblanceolatis, 10-12 cm. longis, superne atro-viridis, inferne, pallidis marginibus atro-rubris, abrupte apiculatis; scapis 4-5 dm. longis, 12-15 floribus, multilateraliter racemosis; florum pedicellis 1-2 cm. longis, bracteolis 18-20 mm. longis; sepalis 2-2.2 mm. longis, patentibus, lanceolatis, acutis, utrinque ad basim devolvis; corollis 2.2-2.4 cm. longis, 1.7-1.8 cm. latis, conico-ovoideis, carmineis, apicibus luteis, angulis acutissime, fasciculo carpellorum rotundato, acuminato, stylibus viridis, stigmatibus rubro-purpureis.

Plant caulescent, with stems up to 7 dm. tall so far as known, all parts densely papillose-puberulent, leaves subrosulate at the apex and scattered immediately below, 10-12 cm. long, 2.5-3 cm. wide, dark green, deeply channelled and v-shaped, the margins black-purple, the

undersurface glaucous and silvery puberulent, the apex abruptly apiculate, the midrib raised and distinct only at the cuneate base; inflorescences 4-5 dm. long, erect, the bracts similar to the leaves, but not so tapered at the base, 5-6 cm. long, oblanceolate, somewhat broadly acuminate; flowers 12-15 in a multilateral raceme, the pedicels 1-2 cm. long, 2-bracted, the bracts deciduous, oblong-lanceolate, acute, 18-20 mm. long; calyx spreading, the tube scarcely 1 mm. long, lobes nearly equal, more or less recurved, 2-2.2 cm. long, lanceolate, acute, both sides decurved towards the base causing a tapered appearance; corolla 22-24 mm. long, 17-18 mm. broad, ovoid-conical, very sharply angled, carmine, the tips yellow, slightly spreading, petals deeply v-grooved on the inner face for the lower two-thirds, the upper third flattened; nectar-sacs 5 mm. deep; stamens opposite the petals 15 mm. long, their filaments unribbed, 1.75 mm. wide at the base, those opposite the sepals 18 mm. long, their filaments with a broad midrib, 2.5 mm. wide at the base; carpel cluster 18 mm. long,

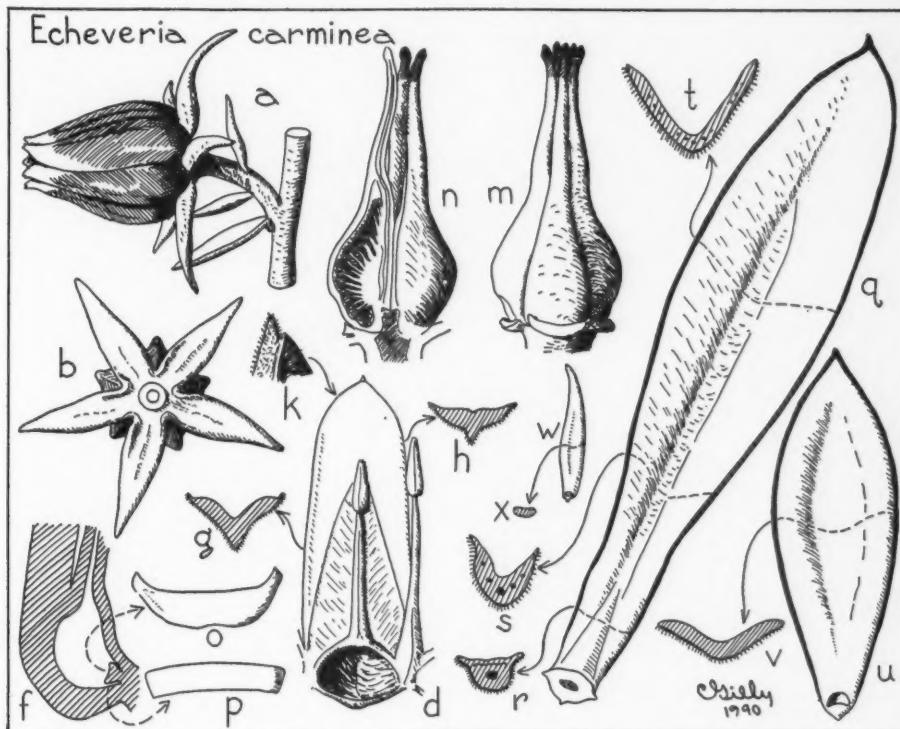


FIG. 81

Echeveria carminea. Explanation of Plate: (a) flower, natural size; (b) basal view of flower, showing calyx, natural size; (d) petal, interior view, $\times 2$; (f) median longitudinal section through petal base, showing nectary gland, nectary sac and stamen attachment, $\times 4$; (g) median cross-section through petal, $\times 2$; (h) cross-section through petal to show flattening at apex, $\times 2$; (k) apex of petal, interior face to right, $\times 8$; (m) carpel cluster, $\times 2$; (n) longitudinal section through carpel cluster, $\times 2$; (o) nectary gland, face view, $\times 5$; (p) nectary gland, dorsal view, $\times 5$; (q) leaf, flattened to show extreme width, natural size; (r) cross-section through leaf petiole, natural size; (s) cross-section through lower portion of leaf, natural size; (t) cross-section through widest portion of leaf, natural size; (u) mid-peduncle bract, natural size; (v) cross-section through mid-peduncle bract, natural size; (w) pedicillary bract, natural size; (x) cross-section through pedicillary bract, natural size.

orbicular, the carpels united for 2 mm. above the base, the body 7-8 mm. long, gradually tapered into the 10-11 mm. long beak, the beaks somewhat outwardly bulged at the midportion, leaving a central hollow; styles pale yellow-green, the stigmas maroon-purple with olivaceous tips; nectarine glands lunate, 5 mm. long, whitish, not touching each other, standing out collar-like.

Evidently a sister species to *E. spectabilis*, but somewhat later-flowering, and much more pubescent, with darker colored, broader flowers, and longer, more narrow leaves. Other differences will be found by comparison of the descriptions and illustrations.

Habit and pubescence similar to *E. coccinea*

and *E. pubescens* differing markedly in the much larger, pedicelled flowers and less marked pubescence. Related rather to the Central and South American group, but differing from all in the flower size which is approached only by *E. Harm-sii* (*Oliveranthus elegans*).

Type collected in the mountains west of Tehuantepec, State of Oaxaca, Mexico, in the winter of 1938-39 and flowered at The New York Botanical Garden in 1940. Specimen deposited in The New York Botanical Garden Herbarium.

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By the way, that cut of the horned toad (lizard) on page 29 gives me a heart ache. I had one for a year and he died, I imagine from being soaked in beer. I filled a shallow dish with it to attract the flies and did not have sense enough to wash him off after he fell into the trap. What I went through feeding that fellow! My daughter brought him here from Arizona.

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